

AMSAT News Service Weekly Bulletins

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AMSAT NEWS SERVICE

ANS-146

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on <http://www.amsat.org> publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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SB SAT @ AMSAT \$ANS-146.01

ANS-146 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 146.01

>From AMSAT HQ SILVER SPRING, MD.

DATE May 26, 2013

To ALL RADIO AMATEURS

BID: \$ANS-146.01

First picture from ESTCube-1 ham radio CubeSat

The first picture taken
by the amateur radio CubeSat ESTCube-1 in space has been released.

ESTCube-1 was launched from Kourou in the Caribbean on May 7 at 0206 UT on an ESA Vega rocket into a 704 km orbit.

The hard work of the first two weeks has paid off and the CAM team, leaded by the University of Tartu Computer Technology graduate student Henri Kuuste has this to say: The camera works perfectly and so do all the other subsystems, needed for taking the photo. The first image was captured on May 15 over the Mediterranean Sea,

showing the sea, Sahara desert, and Tunisia.

On Monday, May 13 the whole ESTCube-1 team was invited to the reception of the rector of University of Tartu to celebrate the success of the satellite. Watch the video (in English) at <http://www.uttv.ee/naita?id=17163>

ESTCube-1 was built by students at the University of Tartu. The main mission of the satellite is to test electric solar wind sail technology, a novel space propulsion technology that could revolutionize transportation within the solar system. It will deploy a 10 meter conductive electrodynamic tether and the force interacting with the tether will be measured.

The technology is based on the electrostatic interaction between the electric field generated by the satellite and the high-speed particles being ejected from the Sun. A spacecraft utilizing this method would first deploy a set of electrically charged wires, which allow to generate an electric field over a large area. This area effectively forms a "sail" that can be pushed by the charged particles by being diverted by it and therefore transferring momentum to the craft.

ESTCube-1 uses these frequencies:
437.252 MHz - CW beacon, callsign ES5E/S
437.505 MHz - 9600 bps AX.25 telemetry, callsign ES5E-11

Electric solar wind sail
<http://www.electric-sailing.fi/>

EstCube on Facebook
<https://www.facebook.com/estcube/>

EstCube website
<http://www.estcube.eu/en/home>

Wiki EstCube-1
<http://tinyurl.com/WikiESTCube-1>

[ANS thanks Southgate Amateur Radio News for the above information]

NEE-01 Pegasus 910 MHz TV Camera in Action

NEE-01 Pegasus (Pegaso) the first of two HD TV CubeSats built in Ecuador launched on a CZ-2D rocket from the Jiuquan Space Center on Friday, April 26 at 0413 UT.

The 1U CubeSat (10x10x10 cm) was built in Ecuador and carries a 0.9 watt output 720p HD TV transmitter on 910 MHz (an amateur radio band in some countries).

EarthCam has teamed up with the Ecuadorian Civilian Space Agency to deliver what EarthCam describe as an amazing viewing experience from an orbiting satellite. You can view the NEE-01 Pegasus SpaceCam online at <http://www.earthcam.com/world/ecuador/ecs/>

NEE-01 Pegasus (Pegaso)
<http://amsat-uk.org/2013/04/25/nee-01-pegasus-hd-tv-cubesat/>

[ANS thanks AMSAT-UK for the above information]

Ecuador Pegasus CubeSat fears over space debris crash

BBC News is reporting that at 0538 UT on Thursday, May 23 Ecuador's new NEE-01 Pegasus 910 MHz CubeSat collided with debris from a S14 Soviet rocket launched in 1985.

The satellite was some 1,500 km east of Madagascar at the time of the impact. Pegasus, launched less than a month ago, is the first 1U CubeSat to carry a HD TV transmitter and deployable solar panels. The basic satellite is just 10 by 10 by 10 cm but, when deployed, the solar panels have a span of 70 cm.

Ronnie Nader with Elisse Nader and CubeSat Ecuador's first Astronaut Ronnie Nader is quoted as saying "Pegasus could be damaged or spinning out of control, but because it's still in orbit, we have hope".

He had said earlier that it could take up to 48 hours to ascertain possible damage using radar.

Read the BBC News story at <http://www.bbc.co.uk/news/world-latin-america-22635671>

May 23, 0700 UT: Ronnie Nader posted "Survived the event, but we are almost sure of side impact with particles, tomorrow [May 23 ECT?] we will see the state of Pegasus, but we are still in the sky, still have Pegasus".

May 23, 1600 UT: Ronnie Nader tweeted "Now we are sure that there [was] particle impact".

The BBC report that the Ecuadorian Government contributed \$700,000 towards the launch costs of the 1U CubeSat. It was launched on April 26, 2013 into a 660 km orbit on a CZ-2D rocket from the Jiuquan Space Center.

Educational outreach is an important part of the project. The Ecuadorian Space Agency EXA is partnering with schools in Ecuador as part of the ASTERIA Program, in which students will use the satellite in their curricular and extra curricular activities.

902 – 928 MHz is an amateur radio allocation in some countries.

NEE-01 Pegasus 910 MHz TV Camera in Action
<http://tinyurl.com/o94oqbu>

NEE-01 Pegasus HD TV CubeSat
<http://amsat-uk.org/2013/04/25/nee-01-pegasus-hd-tv-cubesat/>

[ANS thanks AMSAT-UK for the above information]

Argentinian CubeSat CubeBug-1 was also hit by space debris.

One of the companions of PEGASUS, the Argentine satellite CubeBug-1 also reported changes in the tilt of its orbit and confirmed at least

1 particle impact. The Argentine team reported a slight change in the inclination of the orbit of the NEE-01 PEGASUS product of this collision, however to the issue of this newsletter we can not confirm this information to make more measurements, if this is confirmed could slightly alter satellite overpass schedules on Ecuadorian territory, the Space Operations Directorate EXA works to adjust the new orbital calculations and check the magnitude of this change.

The Space Operations Directorate EXA is analyzing the data collected at each step of the satellite to determine if you can recover the use of the satellite and will have a report ready to expose to the media on Monday May 27 at 10h00 in the ECU911 Samborondon.

CubeBug-1, NEE-01 Pegasus and TURKSAT-3USAT (Mode J Linear transponder) were all deployed from the same launch vehicle on April 26.

See the EXA report at <http://www.exa.ec/bp52/>
Google English <http://tinyurl.com/q8wdql2>

[ANS thanks M5AKA and Agencia Espacial Civil Ecuatoriana for the above information]

NASA History Program Office Fall 2013 Internships

The NASA History Program Office is seeking undergraduate and graduate students for fall 2013 internships. The History Program Office maintains archival materials to answer research questions from NASA personnel, journalists, scholars, students at all levels and others from around the world. The division also edits and publishes several books and monographs each year. It maintains a large number of websites on NASA history.

Students of all majors are welcome to apply. While detailed prior knowledge of the aeronautics and space fields is not necessary, a keen interest and some basic familiarity with these topics are needed. Strong research, writing and editing skills are essential. Experience with computers, especially hypertext markup language, or HTML, formatting and social media (Twitter and Facebook) is a plus.

Intern projects are flexible. Typical projects include handling a variety of information requests, editing historical manuscripts, doing research and writing biographical sketches, updating and creating websites, creating Twitter and Facebook entries, and identifying and captioning photos.

Applications for fall 2013 internships are due June 1, 2013.

For more information, visit <http://history.nasa.gov/interncall.htm>

If you have questions about this opportunity, please contact Bill Barry at bill.barry@nasa.gov.

[ANS thanks NASA for the above information]

Registration for the 5th European CubeSat Symposium (3-5 June 2013)

This is a final reminder for you to register at reduced rate for the 5th European CubeSat Symposium to be held on 3-5 June 2013 at Brussels, Belgium.

Kindly keep in mind that the registrations that will be received after 27 May will be charged at a higher rate.

The preliminary programme and all other details are published at the web site www.CubeSatSymposium.eu

[ANS thanks Cem O. Asma, PhD for the above information]

NASA Seeks Academic Partners for SmallSat Technology Collaboration

NASA is seeking small spacecraft technology project proposals from U.S. colleges and universities that would like to collaborate with agency researchers.

Small spacecraft, or smallsats, represent a growing field of space research and operations in which universities often have led the way in technology development. Smallsats, some of which are as small as a four-inch cube, are not expected to replace conventional spacecraft, but sometimes can provide an alternative to larger, more costly spacecraft. Smallsats can serve as platforms for rapid technology testing or specialized scientific research and exploration not otherwise possible. Smallsats also can be developed relatively quickly and inexpensively, and can share a ride to orbit with larger spacecraft.

NASA expects to competitively select approximately 10 proposals. Each team will form proposal partnerships with researchers from any of NASA's field centers. Awards for each project will include as much as \$100,000 (\$150,000 for teams of more than one school). Proposals submitted in response to this NASA cooperative agreement notice are due June 5, 2013.

In addition, NASA will fund the time for NASA employees to work with each selected team. Project funding is for one year with the potential to continue for a second year. Proposed projects could include anything from laboratory work to advance a particular spacecraft technology to flight testing of a new smallsat. For example, projects might focus on a technology area such as propulsion, power or communications, or on a smallsat capability, such as formation flight or satellite rendezvous.

Details of the opportunity and instructions for submitting proposals are provided in a Cooperative Agreement Notice that is available online at <http://tinyurl.com/cb3mqdw>.

For additional information on the Small Spacecraft Technology Program, visit <http://www.nasa.gov/smallsats>.

The Small Spacecraft Technology Program is part of NASA's Space Technology Mission Directorate, which is innovating, developing, testing and flying hardware for use in NASA's future missions. For more information about NASA's investment in space technology, visit <http://www.nasa.gov/spacetechnology>.

Questions about this opportunity should be directed to Rachel Khattab

at rachel.khattab(a)nasa.gov.

[ANS thanks NASA for the above information]

Satellite Applications Catapult Hackathon

The Satellite Applications Catapult is hosting a Satellite Applications Hackathon event on the weekend of 8-9 June 2013. It will take place at the Harwell Science and Innovation Campus.

The two-day 'technology development' event is part of a series of activities to help generate innovative ideas and solutions in response to several challenges set by the Catapult or its associated partners. Hackathons offer an innovation platform to enable people to work together to solve challenges using space technologies, and exploit the benefits for both space and other markets sectors, eg. transport, healthcare, natural resources, etc.

The Hackathon is open to anyone who would like to participate – software developers, engineers, technologists, scientists, designers, artists, educators, students and entrepreneurs – anyone who has a passion to help change the world.

To register for the Hackathon, please go to catapulthackathon.eventbrite.co.uk or email [hackathons\(a\)sa.catapult.org.uk](mailto:hackathons(a)sa.catapult.org.uk).

For more Information visit
<http://sa.catapult.org.uk/event/catapult-hackathon/>

[ANS thanks AMSAT-UK for the above information]

Amateur Radio Satellites for Emergency Communications

Grupo de Radioaficionados para Operaciones Satelitales (GROS)
Coordinator Raydel Espinet CM2ESP comments on the use of amateur radio satellites for emergency communications and describes how an amateur satellite was used in a Civil Defense exercise on May 18-19, 2013

About the topic of satellites and emergencies I think satellites are an option very important to consider when there is no more available. In case of HF propagation blackouts or poor conditions and when local VHF and UHF repeaters fails, satellites can bring help, specially from light weight battery run portable stations.

Here in Cuba we do every year an emergency rehearsal exercise named "Meteoro" which is organized by Cuba's Civil Defense to simulate catastrophes and other actions relevant to the upcoming hurricane season.

This weekend (May 18th and 19th) was held the 2013 Exercise, like always Cuban Ham Radio Operators are invited to participate as an important asset during emergencies. But by first time ever on the Civil Defense National Headquarters were is installed amateur station C09DCN we do a short and simple satellite demonstration to the Civil

Defense authorities.

The short demo was just a simple "hello" exchanged between C06CBF (Hector) in Cienfuegos Province and CM2ESP/Portable (Raydel) in the Headquarter's backyard. Hector had done previous years demos for his province's civil defense authorities, but this was the first time a demo was done at the National Civil Defense Headquarters. As HF propagation was terribly bad that day due to the recent solar flares the Civil Defense Authorities were very pleased with our short demo proving that satellites can be an alternative when ground and ionospheric propagation are disrupted.

The Press publish a short report about the amateur radio importance on emergencies and there is also a short mention in paragraph three of the very first satellite contact.

The news report can be found at
http://www.ain.cu/2013/mayo/19ya-meteoro_reduccion_desastres.htm

It is in Spanish only, but Google translator works fine
<http://tinyurl.com/navmyoh> (Google Translation)

On the picture featured on the news report from the Cuban News Agency you can see C09DCN Club Station (Defensa Civil Nacional – National Civil Defense) being operated by C020T in digital modes and C02JC in voice communications. The satellite demo was done portable on the backyard on Sunday at 14:10 UTC during a S0-50 pass, the press arrived one hour after the satellite pass so unfortunately there is no photo available.

[ANS thanks Raydel, CM2ESP for the above information]

NASA looking for far-out ideas

NASA is looking for far-out ideas. NASA's Innovative Advanced Concepts (NIAC) Program is seeking Phase II proposals for continuation of promising studies selected during the first phase of the visionary program.

The NIAC program funds cutting-edge concepts with the potential to transform future aerospace missions, enable new capabilities, or significantly alter current approaches to launching, building, and operating aerospace systems.

"Creating the technologies needed to keep our explorers -- robotic and human -- alive and well is a terrific challenge, and these transformative concepts have the potential to mature into the solutions that enable our future missions," said Michael Gazarik, NASA's associate administrator for space technology in Washington.

"NASA's early investment and partnership with creative scientists, engineers and citizen inventors from across the nation holds the potential to pay huge technological dividends and help maintain America's leadership in the global technology economy."

NIAC's Phase II opportunity continues development of the most promising Phase I concepts. These are visionary aerospace architecture, mission, or system concepts with transformative potential, which continue to push into new frontiers, while remaining technically and programmatically credible. NIAC's current portfolio

of diverse efforts advances aerospace technology in many areas, including science, aeronautics, robotics and manufacturing.

Recent NIAC Phase II studies have included a concept for "printable spacecraft," which could be manufactured using additive manufacturing technology that creates 3-D objects from computer designs. Spacecraft electronic components could be "printed" layer upon layer on flexible materials, advancing the functionality and availability of components needed for space missions. Another study is examining the feasibility of using high temperature superconducting magnets as a potential form of radiation shielding in space.

"Phase II proposals are especially exciting because they can provide the opportunity to bring real breakthroughs one step closer to implementation," said Jay Falker, NIAC program executive at NASA Headquarters.

NASA will be accepting NIAC Phase II proposals of no more than 20 pages in length until July 9. Selection announcements are expected later this year. This solicitation is open only to current or previously awarded NIAC Phase I concepts. Complete guidelines for proposal submissions are available on the NIAC website at <http://www.nasa.gov/niac>.

NASA expects to initiate approximately five new Phase II studies this year. The number of awards will depend on the strength of proposals, availability of appropriated funds and selected mix of Phase I and Phase II awards. Selected proposers will receive as much as \$500,000 over two years to further analyze and develop their innovative concepts.

NIAC is part of NASA's Space Technology Mission Directorate, which is innovating, developing, testing and flying hardware for use in NASA's future missions. To view the NASA NIAC Research Announcement for this solicitation and for more information about the agency's Space Technology Mission Directorate, visit: <http://go.usa.gov/R1N>

[ANS thanks Southgate Amateur radio News for the above information]

Update: Museum Ships Weekend Special Event Station KK5W Satellite Operations

The Brazos Valley Amateur Radio Club (BVARC) will participate in the Museum Ships Weekend Event on June 1-2, 2013 from Pelican Island (IOTA NA-143) near Galveston, Texas. Currently 90 ships worldwide are registered to participate in the event and it is expected that additional museum ships will register before the event begins. In 2008 the BVARC satellite team was the first museum ship to use OSCAR satellites. Last year at least a half dozen museum ships joined us on the OSCAR satellites.

This year the KK5W team will launch a balloon on Saturday morning, June 1, 2013. Previous balloons launched by the South Texas Balloon Launch Team have reached an altitude of over 111,000 feet and have traveled as far east as South Carolina. This balloon will carry a 70cm to 10m linear transponder with center frequencies of 433.500 MHz and 28.600 MHz. The balloon can be tracked on <http://www.aprs.fi> by entering the identifier N5BPS-11 (the USS Cavalla's wartime call sign was NBPS). Working the balloon

transponder is just like working a satellite but with no Doppler shift.

BVARC plans a full 2-day operation on the HF bands. Operation on OSCAR satellites is planned for daytime passes on Saturday, June 1, 2013. The BVARC satellite and balloon team consists of AMSAT members Andy MacAllister, W5ACM, Allen Mattis, N5AFV, Charlie Keng, K5ENG, Carl Hacker, WC5WM, Thomas Krahn, KT5TK, and Mike Scarcella, WA5TWT.

We encourage any interested satellite operators to volunteer to operate on the OSCAR satellites if you live near a participating museum ship. Join in and be part of this worldwide event.

If you hear KK5W on during MSWE 2013 give us a call. QSL with SASE to KK5W, Brazos Valley Amateur Radio Club, PO BOX 2997, Sugar Land, TX 77487-2997.

Additional information:

<http://www.nj2bb.org/museum/index.html>

[ANS thanks Allen F. Mattis for the above information]

ARISS News

+ Congratulations to Expedition 34 Commander Chris Hadfield KC5RNJ/VA300G for his successful return to earth. Chris dedicated himself to bringing space science to students around the world. Notable are the 23 ARISS contacts in which he participated.

Successful ARISS Contacts

+ Yellowknife R.C.M.P. Headquarters Yellowknife Northwest Territories Canada 2013-05-12 17:55 UTC

A successful International Space Station school contact was conducted between participants at Yellowknife R.C.M.P. Headquarters, Yellowknife, NWT, Canada and Expedition 34 Commander Chris Hadfield, KC5RNJ/VA300G, on 12 MAY 2013 at approximately 17:55 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was a telebridge between NA1SS and k6DUE. The contact was audible over the Eastern U.S. and adjacent areas.

Yellowknife is the capital city of Northwest Territories in Canada's north and has a population around 20,000. Yellowknife is found on the north shore of Great Slave Lake and on the west side of Yellowknife Bay, near the outlet of the Yellowknife River. Yellowknife is known as the "diamond capital of North America" because there are three mines near our city.

This event in Yellowknife brought in many areas of their community. The Royal Canadian Mounted Police detachment was the host for this event. Their commanding officer started the event by greeting all who attended. The event was blessed before the contact by one of the respected Elders. Students from ages 6-17 asked the questions. They were from local schools, the Side Street Youth Center, and families of police officers. This was a huge celebration of our community connections.

+ Participants of the first phase of the qualifying round of the World "Man will fly away, come back a hero" in Podolsk, Russia had a

successful 2013-05-15 07:41 UTC The contact was direct via RN3DOM with Expedition 35 Cosmonaut Pavel Vinogradov RV3BS using station call RSØISS

+ Anacapa School Santa Barbara, California USA 2013-05-22 17:43 UTC

A successful International Space Station school contact was conducted between participants at Anacapa School, Santa Barbara, CA and Expedition 35 Astronaut Christopher J Cassidy KF5KDR on 22 May. The event began at approximately 17:43 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was direct between NA1SS and N6KTH. The contact was audible over portions of the west coast of the U.S.

Anacapa School is an independent, co-educational, college preparatory day school for junior high and high school students. This year they have a total of 65 students in grades 7-12. Through academic and experiential learning, they encourage students to integrate critical thinking, creativity, integrity, and compassion in order to develop the potential of each individual in our diverse community.

The Anacapa Near Space Exploration Club - KK6BBL was founded in 2010 by Anacapa students. The first team designed and built Anacapa Amateur High-Altitude Balloon 1 (AAHAB-1), which launched on May 22, 2011, returning stunning still images from an altitude of 91,122 feet over the California Central Coast. In 2012, a second team consisting of new and returning crew members built off of the success with a second near space probe, AAHAB-2. Team AAHAB-2 set even more ambitious goals including a live Amateur Television video downlink, high-definition recording, radiation sensors and live APRS telemetry. On May 5, 2012, AAHAB-2 returned to Earth after a project record-breaking flight peaking at more than 111,814 feet above the surface! This year a new group of students are busy preparing for the ARISS contact, developing new designs and earning their Amateur Radio licenses.

Following the success of the two balloon probes and their acceptance into the ARISS / TFS program last summer, they decided to make space exploration the focus of their annual Synthesis Unit for the 2012-2013 school year. This means that all of the students at Anacapa have spent many hours over the past few months taking an in-depth look at the space program's past, present and future by doing independent research and hearing from expert speakers like NASA Astronaut Rick Linnehan who visited us in January. Students are presently in the process of finalizing the Synthesis product which is a report of their findings.

Other areas schools were asked to join them on the day of the contact so they might share this "million dollar moment."

+ Upcoming ARISS Contact Schedule as of 2013-05-25 21:00 UTC

ATR International Youth Forum - "Growth points", Altai Krai Belokuriha, Russia Contact is a go for Tue 2013-06-04 21:15 UTC

ARISS is requesting listener reports for the above contact. Due to issues with the Kenwood radio that are not fully understood at present, the Ericsson radio is going to be used for these contacts. ARISS thanks everyone in advance for their assistance.

[ANS thanks ARISS, David AA4KN and Charlie AJ9N for the above information]

Satellite Shorts From All Over

+ SPUTNIX is granted a license for space activity

SPUTNIX has been granted a license by the Russian Federal Space Agency for engaging in space activity, namely: creating and modernizing small automatic space vehicles for scientific and commercial purposes.

[SPUTNIX_is_granted_a_license_for_space_activity_999.html](#)

+ The three planets converging in the Western sky just after sunset May 25-28 are Jupiter, Venus and Mercury.

+ NASA-Built Nanosatellite Launch Adapter System Ready For Flight

Nanosatellites now have their own mass transit to catch rides to space and perform experiments in microgravity. A new NASA-designed and developed satellite deployer, dubbed the Nano Launch Adapter System (NLAS), is scheduled to demonstrate the capability to launch a flock of satellites into space later this year.

<http://tinyurl.com/povkvfe>

+ First precise MEMS output measurement technique unveiled

The commercial application of MEMS, or micro-electro-mechanical systems, will receive a major boost following the presentation of a brand new way to accurately measure the power requirements and outputs of all existing and future devices.

The cheap and easy to apply technique will be presented for the first time at the TechConnect World Conference 2013 by a research team from Laboratoire national de metrologie et d'essais (LNE) in France. The researchers believe it will help manufacturers improve product performance, develop new functionalities, reduce energy consumption of mass production, respond to market demands for miniaturization, and increase reliability of MEMS devices around the world.

<http://tinyurl.com/q9g3phx>

+ Plug-and-Play technology for microsatellites has been experimentally confirmed

SPUTNIX specialists within the work on creation of a microsatellite platform TabletSat have assembled and tested the onboard control system equipment based on Space Plug- and-Play Architecture (SPA) specifications. This set of open standards has been developed by the American Institute of Aeronautics and Astronautics, AIAA, jointly with the U.S. Air Force Research Laboratory, AFRL.

<http://tinyurl.com/p3rzk5u>

+ May Edition of MilsatMagazine is available online

http://www.milsatmagazine.com/2013/MSM_May2013.pdf

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, KC8YLD
kc8yld at amsat dot org